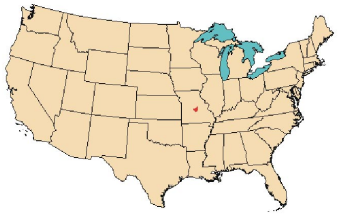
sites, likely the result of escapement from aquaculture facilities. The silver carp's history and use in Arkansas are closely intertwined with that of the bighead carp; and due to its feeding habits, the silver carp is also a direct competitor with all native fish larvae and juveniles; with adult paddlefish, bigmouth buffalo and gizzard shad; and with native mussels. The silver carp is presently spreading rapidly throughout the large rivers of the Mississippi River Basin, with huge numbers and significant natural reproduction being documented by biologists in off-channel and backwater habitats.

Black carp (*Mylopharyngodon piceus*): The black carp is native to most Pacific drainages of eastern Asia. It was first brought to the U.S. in the early 1970's as a "contaminant" in imported grass carp stocks delivered to a fish farm in Arkansas. The species closely resembles the grass carp in appearance, except that the gill rakers are fused and hardened (looking almost like human molars) for use in crushing the shells of mollusks and crustaceans, the black carp's primary food. A second importation occurred in the early 1980's; this time for use as a food fish and as a biological control agent to combat the spread of a trematode parasite in cultured catfish. The first and only known record of escapement or release to the wild occurred in Missouri in 1994 when thirty or more black carp, along with several thousand bighead carp escaped into the Osage River in Missouri when high water flooded holding ponds at a private aquaculture facility near Lake of the Ozarks. Black carp are currently proposed for widespread use by fish farmers for the control of snails, the intermediate host of the trematode parasite in catfish. Many Mississippi River Basin states have requested through the Mississippi Interstate Cooperative Resource Association (MICRA), that the U.S. Fish and Wildlife Service regulate the use of black carp by placing it on the federal list of injurious wildlife species under the Lacey Act. Most states feel that black carp pose a serious threat to native mollusk and snail species, many of which are federally listed as threatened or endangered. Meanwhile, Mississippi, Arkansas, Texas and Missouri permit stocking of genetically altered and presumably sterile black carp in fish farm ponds. Missouri has also initiated a 5-year program to supply limited numbers of genetically altered black carp to fish farmers in the hope that state officials will be more successful than private operators in preventing the escape and spread of this non-native species.



Black carp (Mylopharyngodon piceus)
Drainages with introductions

What Can You Do? Become more informed about the spread of non-native species nationwide. Consult your local, state, and federal conservation authorities as to the threat of non-native species in your area, and to the laws and regulations governing the importation, culture, maintenance, and stocking of non-native species. Utilize care in the purchase and use of baitfish in lakes and streams. Ask your bait dealers where their baitfish came from, and never release any unused baitfish to the wild; always destroy them or return them to your bait dealer. Learn and understand the biology and needs of aquarium fish species before purchasing them for your home aquarium. Never release pet fish or aquatic organisms from the home aquarium to open waters. Either destroy them, sell or give them to someone else, or return them to the store where purchased for proper disposal. Support stronger local, state and federal regulations designed to prevent the spread of non-native species, and let others know of your concerns for the protection of native species and biodiversity. Support your local, state and federal natural resource agencies in all of their efforts to stop the spread of non-native species of any kind!

For more information contact:

U.S. Fish and Wildlife Service
La Crosse Fishery Resource Office
555 Lester Avenue
Onalaska, Wisconsin 54650
(608) 783-8434

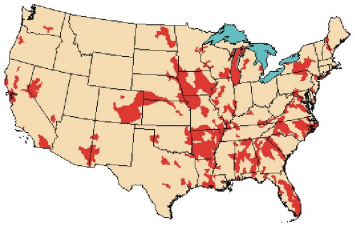
U.S. Fish & Wildlife Service

Asian Carp

Bighead carp (50 lbs) caught in the Cumberland River, Tennessee in May 2000.

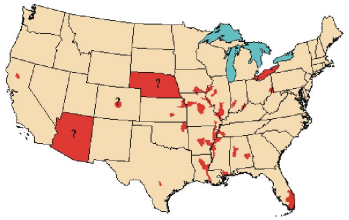
Four species of large Asian carps (grass, bighead, silver and black) have been imported into the U.S. for use in the aquaculture industry, and biologists are raising more and more concerns about their effect on native fish and shellfish when released or escaped to the wild. In fact, in the fall of 1999, fish kills in isolated ditches adjacent to the Upper Mississippi River on the Mark Twain National Wildlife Refuge in southern Illinois included large numbers (97%) of Asian carps, but only one individual each of four native fish species. After that incident, reports came in of commercial fishermen having to abandon fishing sites on the Missouri River because they were catching so many Asian carps that they found it impossible to raise their nets. The common carp, introduced by European immigrants in the 1800's as a food fish, has become so widespread in the U.S. that in most areas it is considered part of the native fauna. The fear is that in time the other four Asian carps will become as widely distributed and abundant, wreaking widespread havoc with native fish and shellfish habitats and foods.

Grass carp *(Ctenopharyngodon idella)*: The grass carp or white amur, native to eastern Asia, was first imported into the U.S. in 1963 to aquaculture facilities in Auburn, Alabama and Stuttgart, Arkansas for research in the control of aquatic vegetation. This species typically inhabits large rivers but can be raised in ponds and rice fields; and large individuals are known to consume many pounds of aquatic vegetation in a single day. The first release into open waters occurred as a result of escapement from the Fish Farming Experiment Station in Stuttgart. By the mid-1960's the Arkansas Game and Fish Commission was raising the species at a state fish hatchery in Roanoke; and by 1978 Arkansas biologists had stocked the species in more than 100 state lakes. Since that time grass carp have rapidly spread to 45 states through the accidental and intentional, legal and illegal release by numerous state and federal agencies, private groups and individuals. Despite efforts to control the spread of grass carp by stocking individuals thought to be sterile, this large (50+ lbs), elongate, stout-bodied, blunt-headed, pale gray minnow has established itself and is reproducing in the wild. Grass carp began to appear in the catches of Arkansas' commercial fishermen in the early 1970's, and by 1976, 25 tons were reported taken statewide. The species has limited potential as a gamefish, and as a food fish the flesh is often said to be tainted with a strong algal flavor. However, local demand for and acceptance of grass carp is reported to be very high in some markets. Grass carp are regarded as the most palatable of all of the Asian carps. While introduced to consume troublesome aquatic plants, grass carp have been known to clean entire lakes of all aquatic plants, and to then consume organic detritus and animal materials. Negative impacts on native organisms have been summarized to include: interspecific competition for food with invertebrates (i.e., crayfish) and other fishes; significant changes in the composition of macrophyte, phytoplankton, and invertebrate communities; interference with the reproduction of other fishes; decreases in refugia for other fishes; modification of preferred fish habitats; enrichment and eutrophication of lakes; disruption of food webs and trophic structure; and introduction of nonnative parasites and diseases.



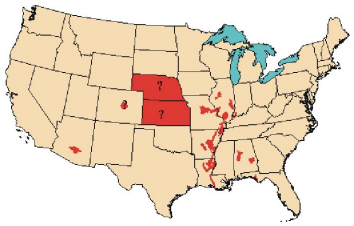
Grass carp (Ctenopharyngodon idella)
Drainages with introductions

Bighead carp *(Hypophthalmichthys nobilis)*: Bighead carp, native to the large rivers of eastern China such as the Yangtze, were first brought to the U.S. in 1972 by a private fish farmer in Arkansas who wanted to use them to improve water quality and increase fish production in culture ponds. By 1974 the species was being evaluated by the Arkansas Game and Fish Commission and Auburn University for its potential biological benefits and impacts. Bighead carp first began to appear in open public waters (i.e. the Ohio and Mississippi rivers) in the early 1980's, likely the result of escapement from fish farms and aquaculture facilities. The species has now been recorded from within, or along the borders of, at least 18 states, and is reported to be "piling up" in large numbers below dams on many Midwestern rivers, and filling the nets of commercial fishermen to the point that nets can't be lifted and fishing sites have to be abandoned. The bighead carp is a very large deep-bodied, somewhat laterally compressed (narrow) fish with a very large head. Scales are very tiny, resembling those of trout, and the eyes are situated below the midline of the body. Gill rakers are long, comblike and close-set allowing the species to strain plankton organisms from the water for food. The bighead carp utilizes open water areas, moving about in the euphotic (surface) zones of large lowland rivers, consuming large quantities of bluegreen algae, zooplankton, and aquatic insect larvae and adults. Because of it's feeding habits, the species is a direct competitor with the native paddlefish, bigmouth buffalo, and gizzard shad; as well as with all larval and juvenile fishes and native mussels. Some cultures value the flesh of bighead carp as a source of food protein and prefer that these fish be kept alive until immediately before cooking. Such demands are growing, particularly in cities with large ethnic Asian communities.



Bighead carp (Hypophthalmichthys nobilis)
Drainages with introductions

Silver carp *(Hypophthalmichthys molitrix)*: The silver carp, native to eastern Asia and the Amur and other lowland rivers of China, was also first brought to the U.S. by an Arkansas fish farmer in 1973, apparently for use in phytoplankton control in ponds and as a food fish. By the mid 1970's, it was being raised at six state, federal, and private facilities in Arkansas; and by the late 1970's it had been stocked in 4 municipal sewage lagoons. This deep-bodied, laterally compressed (narrow), very large minnow is similar to the bighead carp, but much more efficient at straining suspended material from the water through use of gill rakers that are fused into sponge-like porous plates. By 1981, the silver carp appeared in Arkansas' natural waters at 7 different



Silver carp (Hypophthalmichthys molitrix)
Drainages with introductions